



Photographs courtesy of R. McKenzie.

Thirteenth Award of the Medal of the Seismological Society of America

The MEDAL OF THE SEISMOLOGICAL SOCIETY OF AMERICA was established as Article XII of the Constitution and Bylaws in the 1975 annual election. The Medal recognizes outstanding contributions in seismology and earthquake engineering. The thirteenth award, in 1991, was made to Dr. Hiroo Kanamori.

CITATION

Hiroo Kanamori is the last classical seismologist and the first modern seismologist. He loves earthquakes and seismograms and they speak to him as they do to no other person. His work combines the elegance of the early practitioners of the science, who used theory and insight to milk a limited dataset dry, with the sophistication and power that the exquisite new digital datasets deserve. He has led us from the era of Gutenberg, Jeffreys, Weichert, Lehmann, Wadati, and Sato to the era of... well, the era of Kanamori. Everyone in this audience will agree that Hiroo Kanamori knows more about earthquakes than anyone. He also understands more about seismograms, although he probably says "I don't understand" more than any other geophysicist. If you ever hear him say this, you should become very

silent and listen carefully to what he "doesn't" understand. Never try to explain something to him that he "doesn't understand"; just listen. Usually he means "I understand very well but I don't believe a word of it." And neither should you.

Many people specialize in earthquakes. Hiroo is not one of these. His speciality is "understanding." He understands how the Earth works and he wants to understand all the other things that shake seismometers. Anything is fair game, be it a landslide, or a volcanic eruption, or an oil field collapse, or a sonic boom. Our understanding about the source process of great earthquakes is primarily due to Hiroo Kanamori. He has made a truly comprehensive study of the seismograms of great earthquakes and has determined the nature of faulting as-

sociated with them. His results have had tremendous impact on seismologists, tectonophysicists, engineers, and geologists working in the area of contemporary plate tectonics. Among many accomplishments in this area, he identified characteristic modes of subduction for different parts of the circum-Pacific plate boundary and interpreted them in terms of the degree of coupling between oceanic and continental lithosphere. He also cleared away the myth about the global seismicity peak at the turn of the century by reconstructing the Old Milne seismograph and by checking the original memos of Gutenberg. He devised a new "magnitude" scale, good not only for the moment but for all time.

In addition to the study of great earthquakes, he has contributed over a broad spectrum of solid Earth geophysics. Some of the highlights include: determination of crustal structure under Japan and California, discovery of transition zones in the upper mantle under Japan, delineation of velocity and Q structure in the whole mantle, determining the sharpness of the core-mantle boundary, identification of tsunami earthquakes, high-precision measurements of P -wave velocity in southern California for earthquake precursor studies, successful application of asperity concept for strong-motion simulation, characterization of the landslide process associated with Mt. St. Helens eruption using long-period seismic data, quick determination of moment tensor, and explaining the physical basis for various empirical relations in seismology.

Kanamori's work has always been received by colleagues with great trust because of his integrity, ingenuity,

completeness, and sound judgment in arriving at conclusions. The volume and novelty of his work can be compared with that of Beno Gutenberg, a former Director of the Seismological Laboratory.

Watching Hiroo at the daily Seismo Lab coffee breaks is like watching a child in a confectionary shop. With the new TERRAscope's unprecedented dynamic range, response, and coverage, there are discoveries every day. It is like the early days of seismology when everything was new—the core, the inner core, deep focus earthquakes, the Moho... all needed to be discovered. Hiroo is busy discovering giant landslides, monotonic sources, atmospheric resonances, single couple sources, mountain waves, silent events, wrong-side earthquakes, high-rise sources, new spreading centers, micro-tsunami sources; the list goes on and on. Only someone with his experience and open mind could see something novel in every seismogram.

This is an exciting time to be a seismologist. The new data are opening doors and the Earth seems to be cooperating. Or maybe it is only because Hiroo is involved that we have seen a retraction of the "First law of seismology: Installation of a new instrument turns off the events." Each time a new TERRAscope station is installed, there is an earthquake immediately under it, or close-by, or a shuttle mission flies right over it. There is a good correlation of the growth of TERRAscope and devastating earthquakes in California.

We are here to honor Hiroo Kanamori, a unique individual and a one-of-a-kind scientist. Welcome to the era of Kanamori.